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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,837	02/06/2002	Daniel B. Roitman	10011370-1	3741

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EXAMINER

EPPERSON, JON D

ART UNIT PAPER NUMBER

1639

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/072,837	Applicant(s) ROITMAN ET AL.	
	Examiner Jon D Epperson	Art Unit 1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 4, 6, 11, 12, 14, 15 and 21-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 7-10, 13 and 16-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>2/25/02</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of the Application

1. Receipt is acknowledged of a Response to a Restriction Requirement, which was dated on November 18, 2003

Priority Claims

2. No foreign or domestic priority is claimed. Therefore, the effective filing date of the claims is the filing date of the case i.e., February 6, 2002.

Status of the Claims

3. Claims 1-25 were pending in the present application.
4. Applicant's response to the Restriction and/or Election of Species requirements dated November 18, 2003 is acknowledged (Applicant elected with traverse Group I, claims 1-20) and claims 21-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim.
5. Claims 4, 6, 11-12 and 14-15 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected species (see below i.e., Response to

Restriction and/or Election of Species).

6. Therefore, claims 1-3, 5, 7-10, 13, 16-20 are examined on the merits in this action.

Response to Restriction and/or Election of Species

7. Applicant's election of Group I (claims 1-20) **with traverse** is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a) and/ or 37 CFR 1.111(b)).

8. Applicant's election of species is also acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election of species has also been treated as an election without traverse (MPEP § 818.03(a) and/ or 37 CFR 1.111(b)).

9. As a result, the restriction requirement and/or election of species is still deemed proper and is therefore made FINAL.

Information Disclosure Statement

10. The information disclosure statement filed March 27, 2003, fails, in part, to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because one or more publications cited therein i.e., WO 01/025510 A1; Haugland, R. P.; Hermanson, G., lack publication dates and/or listing of country that patent was issued, which are necessary elements for consideration. While

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the other patent and other publications cited therein, and supplied, therewith, have been considered as to the merits, these publications have not. Applicant is advised that the date of any re-submission of these citations contained in this information disclosure statement or the submission of the missing element – their publication dates – will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPE § 609 C(1).

Specification

11. The oath or declaration is missing (page 2 is missing). A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above application number and filing date is required.

12. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claims Rejections - 35 U.S.C. 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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13. Claims 1-3, 5, 7-10, 13, 16-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. For **claim 1**, the term “template” is vague and indefinite in light of applicants’ specification. Applicants define the word “template” in the specification as “meant to include any support [i.e., substrate], be it solid or otherwise, used to define the dimensions of the microbar encoder” (see specification, page 18, lines 22-24). However, applicants preferred embodiments (e.g., see figure 3; see also claim 2) employ a “substrate” from which the microbar encoders are detached. The Examiner contends that the substrate would define at least two of the dimensions of the microbar encoders i.e., the dimensions that were in physical contact with the substrate. If this is not the case then what are the “one or more layers” being “deposited” on (see claim 1) i.e., are the “one or more layers” being “deposited” on a “support [i.e., a substrate]” or not? Applicants are requested to clarify and/or correct. Therefore, claims 1 and all dependent claims are rejected under 35 U.S.C. 112, second paragraph.

B. Claim 1 recites “substantially identical” in second to last line. The term “substantially” is a relative term, which renders the claim indefinite and/or unclear. The term is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Therefore, claim 1 and all dependent claims are rejected under 35 U.S.C. 112, second paragraph.

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C. **Claim 1** recites the limitation "the deposited layers" in step (b). There is insufficient antecedent basis for this limitation in the claim. Therefore, claim 1 and all dependent claims are rejected under 35 USC 112, second paragraph.

D. For **claim 1**, the phrase "dividing the deposited layers into the plurality of microbar encoders" is vague and indefinite. For example, it is not clear whether the deposited "layers" refers to many different "sets" of layers that have been deposited in different locations (i.e., dividing up a collection of entities like one would divide up coins into nickels, dimes and quarters) or to one "set" of layers that are deposited in the same location (i.e., dividing up the layers by cutting them into pieces)? Applicants are requested to clarify and/or correct. Therefore, claims 1 and all dependent claims are rejected under 35 U.S.C. 112, second paragraph.

E. **Claims 2-3** recites the limitation "the substrate." There is insufficient antecedent basis for this limitation in the claim. Therefore, claims 2-3 and all dependent claims are rejected under 35 USC 112, second paragraph.

F. **Claims 3, 17** recite the limitations "the one or more layers in the stack" and "the stacked layers", "the deposited layers." There is insufficient antecedent basis for these limitations in the claims. Therefore, claims 3, 17 and all dependent claims are rejected under 35 USC 112, second paragraph.

G. **Claim 3** recites the limitation "the microbar encoders." There is insufficient antecedent basis for this limitation in the claim. Therefore, claim 3 and all dependent claims are rejected under 35 USC 112, second paragraph.

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H. **Claims 8-9** recites the limitation "the probe molecule" or "the target molecule."

There is insufficient antecedent basis for these limitations in the claims. Therefore, claims 8-9 and all dependent claims are rejected under 35 USC 112, second paragraph.

Claims Rejections - 35 U.S.C. 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 1-3, 5, 7-10, 13, 16, 18-20 are rejected under 35 U.S.C. 102(a) as being anticipated by Natan et al (WO 01/025002 A1) (Date of Publication **12 April 2001**).

For **claim 1**, Natan et al (see entire document) disclose methods for making colloidal rod particles as nanobar codes (see Natan et al, abstract; see also claims), which anticipates claim 1. For example, Natan et al disclose depositing one or more layers unsupported by a template (e.g., see Natan et al, page 7, lines 1-5, "In preferred embodiments ... the nanobar code particles are made by electrochemical deposition ... though they may easily be prepared by other means, both with or without a template"; see also figure 1A showing three different layers i.e., layers A, B and C; see also page 15, lines 5-11, "The present invention is directed to freestanding nanobar codes and their uses

... Nanobar codes that are not produced by some form of deposition or growth within a template ... may be considered free standing even though they have not been released from a template"; see also page 16, paragraph 2, "The particles of the present invention may be prepared by a variety of processes. The preferred process for the manufacture of a particular particle can often be a function of the nature of the segments comprising the particle ... Other methods o that may be applied to nanobar code (and template) synthesis include those that occur in solution (e.g., microfluidic synthesis), and/or involve photochemical techniques, MEMS, e-beam, micro-contact printing, and laser ablation methods"). Furthermore, Natan et al disclose the use of transducing materials to make the layers (e.g., see Summary of Invention, page 3, last paragraph, "The present invention includes free-standing particles comprising a plurality of segments ... The segments of the particles of the present invention may be comprised of any material. Included among the possible materials are a metal, any metal chalcogenide, a metal oxide, a metal sulfide, ... [etc]"; see also Example 2, wherein CdSe [i.e., Applicant's elected species] is disclosed; see also Figures 1-6; see also page 17, lines 17-18; see especially paragraph bridging pages 17-18; see also page 22, paragraph 1; see also page 10, last paragraph).

Furthermore, Natan et al disclose dividing the deposited layers into the plurality of microbar encoders wherein the plurality of microbar encoders have substantially identical characteristic detectable signals (e.g., see page 4, paragraph 2, wherein Natan et al disclose the production of a "plurality" of nanobar tags; see also page 4, paragraph 4, "The present invention includes an assembly of particles comprising a plurality of types of particles wherein each particle has one dimension of less than 10 μm , and wherein the

types of particles are differentiable. Preferably, the types of particles are differentiable based on the length, width, shape and/or composition of the particles"; see also page 5, paragraph 3; see especially page 12, paragraph 2, "In certain embodiments, the members of the assembly are identical while, in other embodiments, the assembly is comprised of a plurality of different types of particles"; see also page 12, paragraphs 3-4; see also page 49, last paragraph; see also page 28, last paragraph, see also claims 37, 55 and 82).

For **claim 2**, Natan et al disclose method steps for detaching the microbar encoders from the substrate (e.g., see page 28, last paragraph, "a final critical step is required to separate each unique type of nanorod and release all the nanorods into solution").

For **claim 3**, Natan et al disclose method steps for using a removable layer (e.g., see page 65, line 25; see also page 7, paragraph 1, disclosing "template dissolution"; see also 35 U.S.C. § 112, second paragraph rejection with regard to the use of a "template").

For **claim 5**, Natan et al disclose detectable signal by electromagnetic emission or absorption (e.g., Natan et al disclose fluorescence; see figure 4; see also page 8, line 5; see also page 19, line 6; see also page 21, line 30).

For **claim 7**, Natan et al disclose quantum dots (e.g., see Example 2, wherein CdSe quantum dot is disclosed; see more generally page 3, line 2; see also page 17, line 18, see also page 36, line 1).

For **claims 8-10**, Natan et al disclose nucleic acid (e.g., see page 8, line 4; see also page 19, line 18; see also page 36, line 19; see also page 38, lines 19-24; see also page

40, line 11).

For *claim 13*, Natan et al disclose the use of a polymeric matrix (e.g., see page 4, line 1; see also page 7, line 12; see also page 8, line 3; see also page 10, lines 14-18; see also page 10, line 23; see also page 10, line 33; see especially page 11, lines 4-5, "Segments may be comprised of ... dye in polymeric material").

For *claim 16*, Natan et al disclose the use of photolithography (e.g., see page 16, lines 17-19, "Methods for forming segments of particles include ... photolithography"; see also page 27, line 20; see also page 37, line 12).

For *claim 18*, Natan et al disclose the use of a linked probe (e.g., see page 13, paragraph 2, "Examples of functionalization include the attachment, often via a linker, to an antibody or antibody fragment, to an oligonucleotide [i.e., examples of probes]"; see also page 37, paragraph 2 disclosing examples like genotyping and SNP mapping; see also page 44, line 22).

For *claims 19-20*, Natan et al disclose the use of multiple pluralities of microbar encoders (e.g., see page 18, paragraph 2, disclosing the use of thousands of "batches" of microbars; see also page 20, paragraph 1, especially line 13; see also paragraph bridging pages 44-45).

15. Claims 1-3, 5, 7-10, 13 and 16-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Ravkin et al (WO 00/63419 A1) (Date of Publication is **October 26, 2000**).

For *claim 1*, Ravkin et al (see entire document) disclose methods for making and using combinatorial chemical library supports having indicia at coding positions (see

Ravkin et al, abstract; see also claims), which anticipates claim 1. For example, Ravkin et al disclose depositing one or more layers unsupported by a template (e.g., see figure 3; see also page 16, paragraph 1 wherein the use of a "micro-punch" is disclosed; see also paragraph bridging pages 5-6; see also page 8, paragraph 3; see also page 15, last paragraph, see also claim 23; see also page 16, line 19 disclosing "rod-shaped" carriers; see also page 24, line 26). Furthermore, Ravkin et al disclose the use of transducing materials to make the layers including nanocrystals including Applicants' elected CdSe nanocrystals (e.g., see page 13, last paragraph; see also page 14, first paragraph). Furthermore, Ravkin et al disclose dividing the deposited layers into the plurality of microbar encoders wherein the plurality of microbar encoders have substantially identical characteristic detectable signals (e.g., see claim 9, "placing into each of a plurality of a separate reaction vessels, carriers having a selected one of a plurality of detectable code combinations"; see also page 5, lines 15-23; see also page 6, paragraph 2; see also page 8, paragraph 2; see page 8, lines 17-18; see also page 17, paragraph 2).

For **claim 2**, Ravkin et al disclose method steps for detaching the microbar encoders from the substrate (e.g., see figure 3 wherein microbar is detached with a micro-punch).

For **claim 3**, Ravkin et al disclose method steps for using a removable layer (e.g., see figure 2, element 204).

For **claim 5**, Ravkin et al disclose detectable signal by electromagnetic emission or absorption (e.g., see page 13, last paragraph; see also page 14, first paragraph; see also page 32, paragraph 2 disclosing light emission).

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For *claim 7*, Ravkin et al disclose quantum dots (e.g., see Example 2, wherein CdSe quantum dot is disclosed; see more generally page 3, line 2; see also page 17, line 18, see also page 36, line 1).

For *claims 8-10*, Ravkin et al disclose nucleic acid including DNA (e.g., see figure 5; see also page 10, line 19; see also page 16, last paragraph; see also page 17, second paragraph; see also claim 6).

For *claim 13*, Ravkin et al disclose the use of a polymeric matrix (e.g., see page 34, paragraph 2; see also page 27, paragraphs 1-2).

For *claim 16*, Ravkin et al disclose the use of photolithography (e.g., see paragraph bridging pages 14-15; see also page 27, last two paragraphs).

For *claim 17*, Ravkin et al disclose the use of a mask (e.g., see page 14, last paragraph; see also page 15, first paragraph; see especially paragraph bridging pages 27-28).

For *claim 18*, Ravkin et al disclose the use of a linked probe including biotin-avidin and chemical linkages (e.g., see page 12, paragraph 2).

For *claims 19-20*, Ravkin et al disclose the use of multiple pluralities of microbar encoders (e.g., see claim 9; see also claim 21 wherein the use of sub-libraries are disclosed).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jon D Epperson whose telephone number is (571) 272-0808. The examiner can normally be reached Monday-Friday from 9:00 to 5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on (571) 272-0811. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1235.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jon D. Epperson, Ph.D.
February 17, 2004

DENNETT O'LEA
PRIMARY EXAMINER

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